INTERVIEWER EFFECTS IN A SURVEY EXAMINING PAIN INTENSITY AND PAIN INTERFERENCE IN NURSING HOME RESIDENTS

Supplementary Table S1: Population, Self-report and Analysis Sample's Distribution by Nursing Homes

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Supplementary Table S1: Population, Self-report and Analysis Sample's Distribution by Nursing Homes

Nursing Home	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Care Places																
N	124	86	155	138	55	65	126	127	99	100	123	145	107	130	119	1,699
% within Care Places	7.3%	5.1%	9.1%	8.1%	3.2%	3.8%	7.4%	7.4%	5.8%	5.9%	7.2%	8.5%	6.3%	7.7%	7.0%	100.0%
Valid Self-report Sample																
n	40	22	35	48	20	20	21	47	45	22	27	49	42	26	25	489
% within Valid Self-report	8.2%	4.5%	7.2%	9.8%	4.1%	4.1%	4.3%	9.6%	9.2%	4.5%	5.5%	10.0%	8.6%	5.3%	5.1%	100.0%
% of Care Places	32.3%	25.6%	22.6%	34.8%	36.4%	30.8%	16.7%	37.0%	45.5%	22.0%	22.0%	33.8%	39.3%	20.0%	21.0%	28.8%
Analysed BPI Sample																
n	18	14	18	22	13	11	17	24	13	10	11	27	30	12	18	258
% within BPI	7.0%	5.4%	7.0%	8.5%	5.0%	4.3%	6.6%	9.3%	5.0%	3.9%	4.3%	10.5%	11.6%	4.7%	7.0%	100.0%
% of Valid Self-report	45.0%	63.6%	51.4%	45.8%	65.0%	55.0%	80.9%	51.1%	28.9%	45.5%	40.7%	55.1%	71.4%	46.2%	72.0%	52.8%

Notes: NH Nursing home; NHR Nursing home residents; N absolute number of care places; n absolute number; % percentage; Population and sampling information from the parental c-RCT examining the pain situation and management in NH from one single NH provider: 42 NH (3,990 care places) in total, 39 NH (3,845 care places) met inclusion criteria, randomization of 20 NH (2,279 care places), inclusion of 15 NH (1,699 care places) after drop out of 5 NH, examined NHR with no, mild, moderate, severe cognitive impairment n=874, included NHR after data management and representing independent sample data n=714, total valid sample of NHR who were able to self-report in standardized interviews n=489, analysed sample with presence of pain and subsequent assessment with Brief Pain Inventory (i.e., pain intensity and interference scale) n=258 (=present study's valid data set)

Supplementary Table S2: Sample Characteristics within External, Internal, Female, and Male Interviewers

Sample characteristics	BPI, $n_{INT}=61$				BPI ($\geq 3_{int}$), $n_{INT}=36$			
	Affiliation		Gender		Affiliation		Gender	
	External	Internal	Female	Male	External	Internal	Female	Male
Interviewer-level	$n_{INT}=42$	$n_{INT}=19$	$n_{INT}=45$	$n_{INT}=16$	$n_{INT}=25$	$n_{INT}=11$	$n_{INT}=29$	$n_{INT}=7$
Gender								
Female	33 (78.6%)	12 (63.2%)	-	-	20 (80.0%)	9 (81.8%)	-	-
Male	9 (21.4%)	7 (36.8%)	-	-	5 (20.0%)	2 (18.2%)	-	-
Affiliation								
External	-	-	33 (73.3%)	9 (56.3%)	-	-	20 (68.9%)	5 (71.8%)
Internal	-	-	12 (26.7%)	7 (43.7%)	-	-	9 (31.1%)	2 (28.2%)
Interviewer workload (number$_{int}$)								
AM (SD)	4.40 (2.9)	3.68 (2.6)	4.40 (2.7)	3.56 (2.9)	6.28 (2.5)	5.18 (3.0)	5.66 (2.5)	7.1 (3.2)
MD, Min-Max	4.0, 1-13	3.0, 2-12	4.0, 2-13	2.0, 2-12	6.0, 3-13	4.0, 3-12	5.0, 3-13	7.0, 4-12
Resident-level	$n_{NHR}=185$	$n_{NHR}=70$	$n_{NHR}=198$	$n_{NHR}=57$	$n_{NHR}=157$	$n_{NHR}=57$	$n_{NHR}=164$	$n_{NHR}=50$
Gender								
Female	111 (60.0%)	52 (74.3%)	125 (63.1%)	38 (66.7%)	103 (65.6%)	45 (78.9%)	112 (68.3%)	36 (72.0%)
Male	74 (40.0%)	18 (25.7%)	73 (36.9%)	19 (33.3%)	54 (34.4%)	12 (21.1%)	52 (31.7%)	14 (28.0%)
Age (years)								
AM (SD)	80.90 (10.1)	82.09 (9.1)	80.66 (9.8)	83.18 (9.7)	81.92 (9.5)	82.00 (9.4)	81.36 (9.6)	83.84 (8.8)
MD, Min-Max	83.0, 60-101	84.0, 60-96	82.0, 60-101	85.0, 60-101	84.0, 60-101	84.0, 60-96	83.0, 60-100	84.0, 62-101
MMSE (Score)								
AM (SD)	22.75 (5.1)	22.36 (5.0)	22.80 (5.1)	22.09 (5.0)	21.55 (5.3)	22.07 (5.3)	21.76 (5.3)	21.48 (5.2)
MD, Min-Max	23.0, 10-30	22.0, 13-30	23.5, 10-30	23.0, 11-30	22.0, 10-30	22.0, 13-30	22.0, 10-30	22.5, 11-30
Documented Dementia								
yes	28 (15.1%)	29 (41.4%)	38 (19.2%)	19 (33.3%)	31 (19.7%)	23 (33.3%)	38 (23.2%)	16 (32.0%)
no	146 (78.9%)	38 (54.3%)	148 (74.7%)	36 (63.2%)	116 (73.9%)	32 (56.1%)	115 (70.1%)	33 (66.0%)

Notes: n (% percentage of non-missing values); BPI Brief Pain Inventory; MMSE Mini-Mental State Examination; int number of interviews; INT Interviewer; NHR Nursing home resident; % percentage; AM arithmetic mean; SD standard deviation; MD Median; Min Minimum, Max Maximum; - not available

Supplementary Table S3: Interviewer variance (ρ_{int}) for total sample and by Interviewer Affiliation and Gender

ρ_{INT} ($\sigma^2_{between}/\sigma^2_{within + between}$) [AM (SD), n_{NHR} per item]	Affiliation		Gender		Total
	External (n_{INT}=25)	Internal (n_{INT}=11)	Female (n_{INT}=29)	Male (n_{INT}=7)	n_{INT}=36
BPI Pain intensity					
Maximum pain	0.1520 [6.63 (2.3), 143]	0.2464 [6.45 (2.2), 55]	0.1587 [6.72 (2.1), 152]	0.1873 [6.13 (2.7), 46]	0.1791 [6.56 (2.3), 201]
Least pain	0.1322 [3.10 (2.6), 131]	0.1447 [4.11 (2.7), 54]	0.1479 [3.43 (2.7), 139]	0.2005 [3.26 (2.7), 46]	0.1759 [3.35 (2.7), 188]
Average pain	0.1964 [5.14 (2.3), 125]	0.2112 [4.73, 2.3), 55]	0.2121 [5.13 (2.2), 136]	0.1739 [4.68 (2.5), 44]	0.2128 [4.99 (2.3), 183]
Actual pain	0.2090 [3.49 (2.7), 138]	0.2061 [4.02 (3.1), 54]	0.2070 [3.63 (2.9), 148]	0.2395 [3.66 (2.7), 44]	0.2333 [3.58 (2.8), 182]
BPI Pain interference					
General activities	0.2387 [5.56 (3.2), 121]	0.3224 [4.50 (2.8), 54]	0.2748 [5.33 (3.1), 133]	0.2833 [4.93 (3.0), 42]	0.2841 [5.20 (3.1), 178]
Mood	0.1827 [4.47 (3.3), 121]	0.3394 [4.31 (2.3), 51]	0.2855 [4.36 (3.4), 132]	0.3322 [4.65 (2.9), 40]	0.3048 [4.37 (3.3), 175]
Walking ability	0.1943 [5.94 (3.7), 121]	0.2685 [4.60 (3.5), 53]	0.2321 [5.53 (3.8), 140]	0.2680 [5.56 (3.3), 34]	0.2327 [5.54 (3.7), 177]
Resilience	0.1537 [5.64 (3.2), 116]	0.3648 [4.42 (3.0), 52]	0.1963 [5.29 (3.2), 126]	0.3552 [5.17 (3.3), 42]	0.2384 [5.23 (3.2), 171]]
Relations with others	0.1980 [2.97 (3.4), 114]	0.3653 [2.70 (3.1), 53]	0.2398 [3.03 (3.5), 127]	0.2418 [2.42 (2.8), 40]	0.2487 [2.85 (3.3), 170]
Sleep	0.1960 [3.68 (3.4), 123]	0.3648 [3.81 (3.6), 52]	0.2735 [3.79 (3.5), 139]	0.2758 [3.44 (3.2), 36]	0.2893 [3.66 (3.4), 178]
Enjoyment of life	0.2342 [4.41 (3.4), 123]	0.3298 [4.13 (3.2), 55]	0.2113 [4.34 (3.3), 137]	0.3612 [4.29 (3.3), 41]	0.2655 [4.30 (3.3), 181]
ρ AM, MD	0.1897, 0.1960	0.2876, 0.3224	0.2217, 0.2121	0.2653, 0.2680	0.2422, 0.2384

Notes: BPI Brief Pain Inventory, ρ interviewer variance derived from one-factorial fixed effects ANOVA, σ^2 variance, AM arithmetic mean, SD standard deviation, MD median, n_{NHR} number of nursing home residents, n_{INT} number of interviewers, number of interviews per interviewer ≥ 3

Supplementary Table S4: Simple Main Effects for Pain Intensity and Pain Interference Scale

Simple Main Effects[a]		BPI Pain Intensity	BPI Pain Interference
Estimates[b]			
GOI	**AOI**	**AM (SE); 95%CI**	**AM (SE); 95%CI**
Female	External	4.24 (0.16); 3.92, 4.56	4.22 (0.20); 3.83, 4.61
	Internal	5.28 (0.29); 4.70, 5.85	4.24 (0.37); 3.52, 4.96
Male	External	5.33 (0.34); 4.65, 6.00	5.00 (0.42); 4.18, 5.83
	Internal	4.29 (0.38); 3.54, 5.04	3.38 (0.50); 2.40, 4.35

Pairwise Comparisons[c]						
AOI	**Comparison by GOI**	**Mean difference (SE); 95%-CI**	**p**	**Mean difference (SE); 95%-CI**	**p**
External	Female vs. male	-1.09 (0.39); -1.85, -0.33	0.005	-0.78 (0.47); -1.70, 0.14	0.095
	Male vs. female	1.09 (0.39); 0.33, 1.85		0.78 (0.47); -0.14, 1.70	
Internal	Female vs. male	0.99 (0.46); 0.08, 1.90	0.034	0.87 (0.95); -0.31, 2.04	0.147
	Male vs. female	-0.99 (0.46); -1.90, -0.08		-0.87 (0.95); -2.04, 0.31	
GOI	**Comparison by AOI**	**Mean difference (SE); 95%-CI**	**p**	**Mean difference (SE); 95%-CI**	**p**
Female	External vs. internal	-1.04 (0.34); -1.70, -0.38	0.002	-0.02 (0.41); -0.84, 0.79	0.956
	Internal vs. external	1.04 (0.34); 0.38, 1.70		0.02 (0.41); -0.79, 0.84	
Male	External vs. internal	1.04 (0.50); 0.06, 2.02	0.038	1.62 (0.63); 0.39, 2.89	0.010
	Internal vs. external	-1.04 (0.50); -2.02, -0.06		-1.62 (0.63); -2.89, -0.39	

Notes: BPI Brief Pain Inventory, GOI Gender-of-Interviewer, AOI Affiliation-of-Interviewer, Dependent variables BPI Pain Intensity (0 no pain-10 worst pain), BPI Pain Interference (0 does not interfere-10 completely interferes), AM arithmetic mean, SE standard error, 95%-CI 95% confidence interval, p error probability, [a] Due to disordinal (cross-over) significant interactions of GOI*AOI for pain intensity and interference score, follow-up simple main effects analyses were interpreted, [b] Estimates represent marginal arithmetic mean, adjusted by Nursing Home Residents gender, age, Mini-Mental State Examination score, independent sample pre-/post-test, [c] Adjustment for multiple comparisons: Bonferroni